

NOTE ON THE SPINES OF A TERTIARY ECHINOID FROM VICTORIA

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Summary

A specimen of the Miocene echinoid *Linthia nelsoni* (McCoy) with spines attached has been found, and the spines are now described. They appear to possess taxonomic value.

Introduction

When marine animals die, their skeletons become sedimentary materials which usually suffer movement before they come to rest in the positions in which we find them in the rocks (thanatocoenoses). Such movement, even though slight, is enough to rob echinoids of their spines, and thus it is rare for fossil echinoids to be discovered with their spines attached.

The Miocene limestones of Victoria were laid down in waters not very distant from the land, but nevertheless they contain but a comparatively small percentage of terrigenous material. On the whole, therefore, sedimentation was not rapid, and sudden burial of faunules was unusual. However, by some rare chance a specimen of *Linthia nelsoni* (McCoy 1882) has been preserved which moved so little and was covered so quickly that the spines can be seen adhering still to the surface of the test.

Genus *Linthia* Desor 1853

Species *Linthia nelsoni* (McCoy)

Figure 1.

Pericosmus nelsoni McCoy 1882, Prodomus of the Palaeontology of Victoria, Dec. 7, *Geol. Surv. Vic.*, pp. 17-19, Pl. 66, figs. 1-2, Pl. 67, fig. 1.

Type Specimens

1. SYNTYPES. McCoy figured three specimens, but did not select any one as a holotype, so the three are syntypes. There is no outstanding specimen which could be selected as a holotype, and indeed all three are quite imperfect. Although McCoy's figures give a fairly satisfactory idea of the species, they involve considerable reconstruction. The syntypes are in the National Museum, and are identified as follows:

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McCoy's figure	Nat. Mus. reg. no.	Other Information
Plate 66, figures 1, 1a, 1b	P 12211	'From Rev. Mr. Price, Wauru Ponds, 28/7/77.' (Donor's name not clear.)
Plate 66, figure 2	P 12212	'Presented by Wm. Nelson, Esq., Wauru Ponds, 7/6/80.'
Plate 66, figure 2a	P 12213	'Ad 26' (Geol. Surv. locality number.)
Plate 67, figures 1, 1a, 1b	P 12211	See below.

There appears to be an error in McCoy's description of his plates. He says that Pl. 76, fig. 1, is one specimen, fig. 2 is 'another specimen', and Pl. 67, fig. 1, is yet 'another specimen'. This makes three specimens in all, and according to Museum records there were only three types. However, on comparing the specimens with the figures, it is clear that three different ones are figured in Plate 66, as shown in the table above. Apparently Pl. 67, fig. 1, is a reconstruction of the same specimen as figured in Pl. 66, fig. 1, viz. 12211. The profile agrees with that of this fossil, but as with all the rest, the drawing is a reconstruction.

All three syntypes come from the limestone quarry on the south side of the Princes Highway at Wauru Ponds, west of Geelong, Victoria. It is the Geological Survey locality Ad 26, which is described as 'Quarry on reserve opposite old "Victoria Inn", Colac Road, 5½ miles from the Barwon Bridge.' The quarry is shown on Quarter Sheet 28 NE, and on the Military Map of the area.

2. *HYPOTYPE*. The specimen with the spines described below was collected by Dr. G. B. Pritchard from the same Wauru Ponds quarry as the syntypes, and when his collection was acquired by the Museum, he kindly drew my attention to this unique specimen and suggested a note be prepared upon it. The fossil is now Nat. Mus. reg. no. P 15277.

Description of Spines

In his description of *Linthia nelsoni*, McCoy stated 'Spines on under side slender, striated longitudinally, about 4 lines long.' There are no spines attached to the tests but a few occur in the matrix, and it seems McCoy surmised that these belonged to the species.

The primary spines are short, about half a centimetre long, with a smooth base of truncated cone shape, the condyle or acetabulum occupying what would otherwise be the apex of the cone. The shaft is circular in cross-section, about half a millimetre in diameter, and apart from a slight expansion where it meets the base, tapers little or not at all until at the distal end it is rounded (see fig. 1a). The shaft

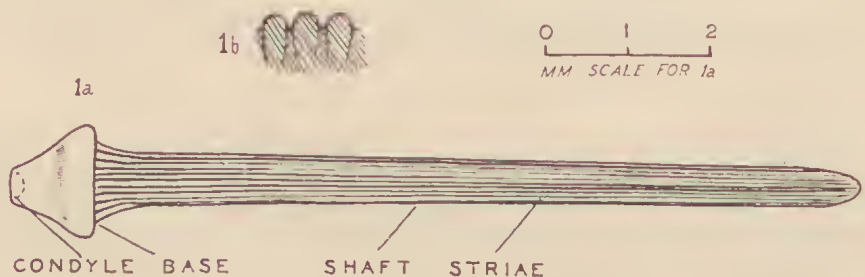


FIG. 1. Spine of *Linthia nelsoni* (McCoy).

1a. General proportions of spine. 1b. Cross-section of striae, greatly enlarged.

possesses about 21 longitudinal striae which run its full length. Two attempts to grind cross-sections mounted in Canada balsam and paraffin respectively were unsuccessful owing to the highly brittle character of the recrystallized calcite. However, a fragment mounted to show a natural cross-section indicated that the striae have a cross-section like that shown in fig. 1b. The striae continue down like segments into the material of the shaft. No orifice is present in these fossil spines.

Taxonomic Value

Among the echinoids collected by Dr. Pritchard there is one poorly preserved specimen (Nat. Mus. reg. no. P 15278) which suggests *Linthia nelsoni*, but does not exhibit sufficient structure to make a sound determination possible. However, it possesses a few spines, and they are precisely like those on specimen P 15277, so one can assume with some confidence that it belongs to McCoy's species.

On the other hand, in the Cudmore Collection in the National Museum there is a *Linthia* from the New Quarry, Batesford, Victoria, which has spines, and was collected by Mr. F. A. Cudmore in 1946. Previous to the arrival of the Pritchard specimens, this was the only irregular fossil echinoid with spines which Mr. Cudmore had seen, in spite of his wide experience as a collector. Mr. Cudmore's specimen belongs to a flatter species of *Linthia*, and although similar, the spines differ in length, in the greater number of striae on the shaft, and in the shape of the base. Thus different kinds of *Linthia* are shown to have similar and yet quite distinct types of spines. It seems, therefore, that the spines of these fossils have taxonomic value (as has been proved for other echinoids) and it should be possible in future to recognize the presence of *Linthia nelsoni* in our Victorian rocks by the presence of their spines alone.